



Welcome! to the Airborne Joint Tactical Radio System Industry Day

Our Two-Fold Purpose

- **Introduce proposed vision, strategy, and acquisition approach for the Airborne JTRS program**
- **Engage Industry in discussions with program office and user representatives to collaborate on improving the schedule and overall approach, based on a clearer**

What We Want from Industry



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- **Program Strategy improvement ideas**
- **What are key Phase 1 objectives to accomplish so Airborne JTRS and Airborne Networking requirements are well defined for Phase 2?**
- **How can we shorten our schedule without undue risk?**
- **What factors drive overall cost and schedule and can they be worked in Phase 1?**
- **How can we best incorporate Lincoln Lab's airborne network experience and analyses into Industry's Phase 1 and Phase 2 efforts?**
- **How can we shorten our schedule without undue risk?**
- **Recommend an incremental strategy to deliver initial capability early, while complying with overall ORD in a step-wise fashion, based on need and technology maturity.**
- **Any risk reduction/technology efforts we should task to government labs?**
- **How can we shorten our schedule without undue risk?**



Administrative Items

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- Emergency exit from the building
 - Front entrance you entered through
 - Back entrance (to the left when exiting auditorium)
 - Back door of auditorium (right side of the screen)
- *Please* turn off cell phones, beepers, pagers while in auditorium
- *Please* wear name tags
- *Escort mandatory* when transiting areas for one-on-ones
 - Please remain in first floor lobby/atrium otherwise
- *Restrooms* located in two corners of the atrium
- *Smoking area* located outside the back entrance
- *Telephone messages* can be left at two numbers:
(781)377-5224 or (781) 377-6510; will be posted in atrium
- *One-on-ones*: Call two numbers above for building access.
Schedule and locations of one-on-ones posted in auditorium.

Agenda



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<u>Time</u>	<u>Topic</u>	<u>Presenter</u>
0800	Opening Comments & Admin	Mr. Joe Mardo, Director, Global Grid PAD
0815	Airborne JTRS Program Plan	LtC Maryann Watson, PM, Airborne JTRS
0915	Airborne Network Concept	Mr. Harry Gong, MITRE
0945	JTRS Performance Reqmts	Mr. Doug Klimek, ANSER
	(WNW and ORD Background)	JTRS Joint Program Office
1015	Break	
1030	Lincoln Lab Supporting Tasks	Mr. Tony Sharon, Task Leader
1100	Desired Warfighting Capabilities	Col 'Whitey' Whitehurst, AC2ISRC/SC
		Mr. Joe Paglierani, NAVAIR
1150	Industry Feedback We Need	Lt Col Watson
1200	Q&A	
1230	Adjourn	
1330-	One-on-One Meetings by Appointment	

Joint Tactical Radio System Airborne Cluster Program Plan



**Maryann P. Watson, Lt Col,
USAF**

AF JTRS Program Manager

Purpose



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**Introduce vision, strategy, and
acquisition approach for the
Airborne Joint Tactical Radio System
(Cluster 4)**

***Provides the Airborne Network in
Network-Centric Warfare***

Agenda



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- Joint Tactical Radio System Overview
- Airborne Cluster Vision & Approach
- Acquisition Strategy
- Stakeholder Activities
- Next Steps
- Summary



What is JTRS?

- ***A New Communications Capability:*** A multi- band, multi- mode, software defined radio that provides a programmable/ reconfigurable communications capability with ad hoc, mobile networking and crossbanding capabilities
- ***An Architecture:***
 - Rules and standards for hardware & software
 - Open standards - mainly commercial
- ***Hardware:*** Modular, scalable, platform specific multi-function software programmable radios
- ***Waveforms:*** Evolving from firmware representations to portable software algorithms
- ***Family of Radios:*** Can accommodate platform specific and unique interoperability requirements through flexible acquisition strategy



JTRS- A Transformation Enabler

Current Systems
(2530 Families)
(750, 000 Radios)

• Navigation



AN/PSQ6A EPLRS

• Positioning



AN/ARG210

• Location



AN/WCS3 UHF SATCOM/LOS

• Identification



AN/ARG201A SINCGARS

• Air to Ground

• Air to Air



ANPRG119 SINCGARS

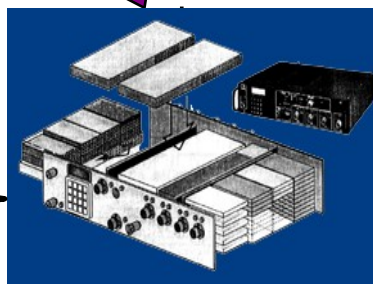
• Ground
to
Ground



AN/PSG5

• SATCOM

**Common Open
Standards Architecture
&
Technology
Base**



Joint Solutions
(1 Family)

**O
P
E
R
A
T
I
O
N
S
A
L**

Airborne

Ground Forces

- Hand held
- Dismounted
- Vehicular

**Maritime/
Fixed Station**

Space

Legacy Waveforms
Commercial Waveforms
New Military Waveforms

JTRS' New Capability "The Golden Nugget"



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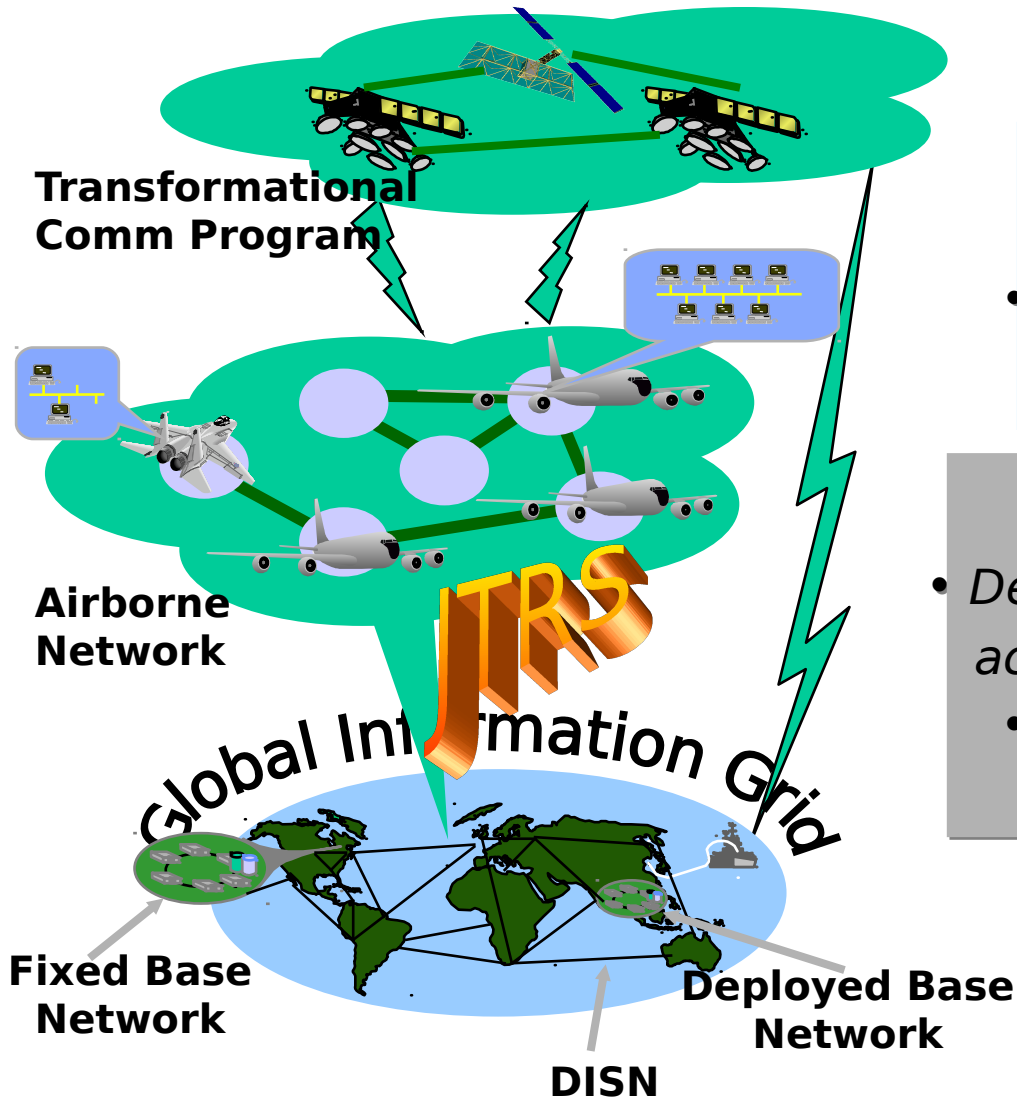
- **Wideband Networking Waveform (WNW) is a threshold requirement in JTRS Joint ORD**
 - **WNW development is underway (on JTRS Cluster 1 contract)**
- **Key waveform features**
 - **Packetized wireless transport**
 - **Supports IP networking**
 - **2 Mbps (threshold)/ 5 Mbps (objective)**
 - **Multiple mission modes**
 - **AJ, LPI/LPD, Narrowband, Wideband**

Must ensure WNW requirements provide capability for future airborne missions

Airborne JTRS Approach



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Vision

- Airborne network
- Expansion of Global Information Grid
 - Flexible family of cost effective airborne radios

Approach

- Define network-centric capabilities to achieve desired operational effects
 - Leverage JTRS to achieve vision
 - maximizes Services' ROI

Foundation of Future Capability

Global Strike Task Force Example



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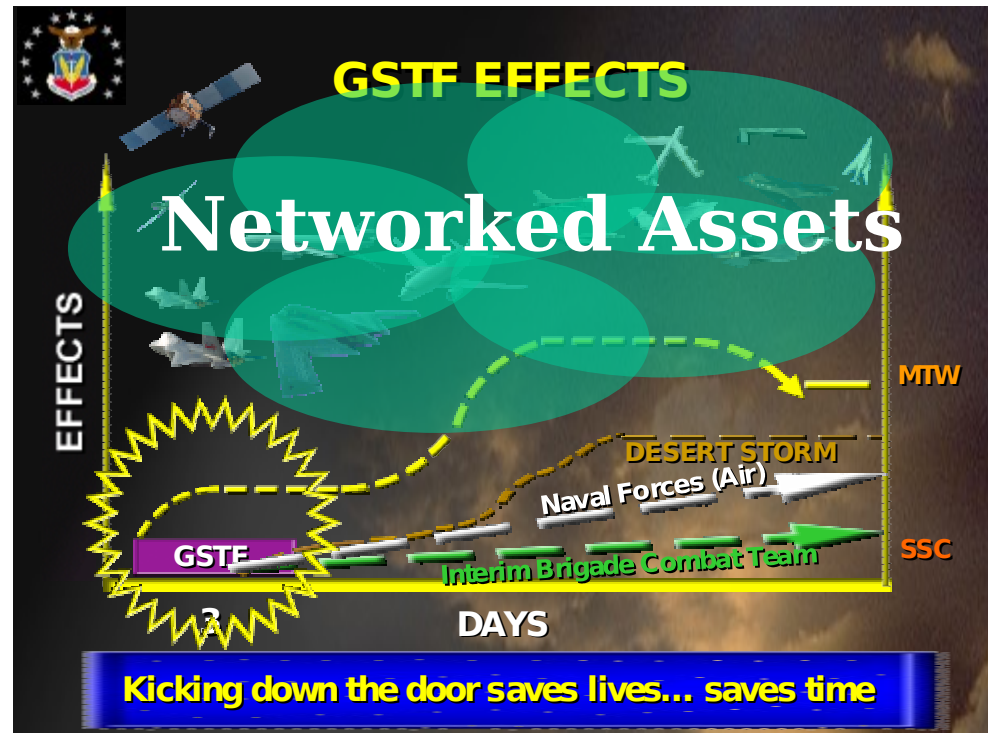
A collection of platforms alone can not achieve desired future GSTF as networked assets can create desired effects

Key Architectural Components

Radio & SATCOM links integrated into a network



Network infrastructure on platforms to support distributed C2 systems



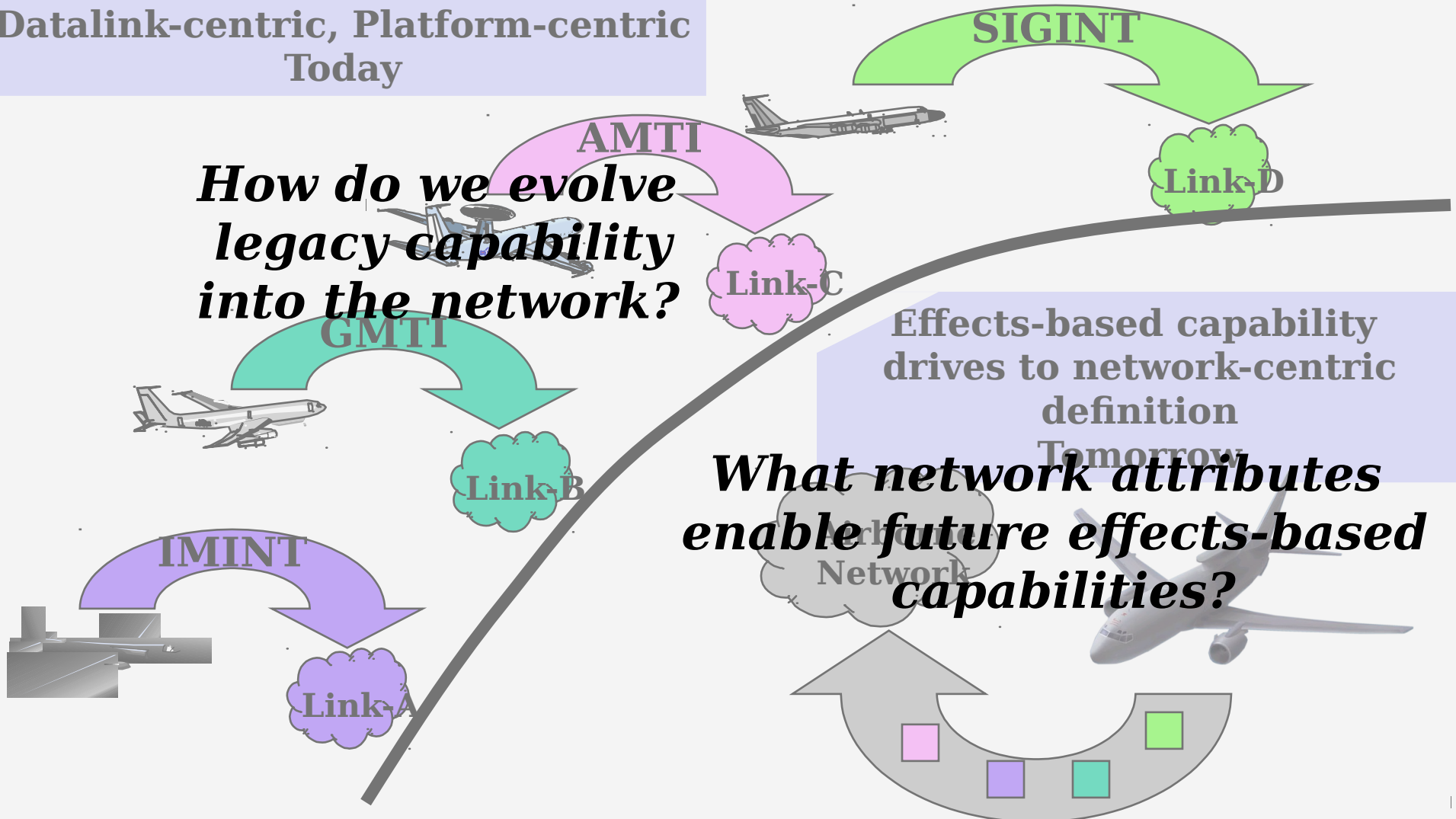
Creating the Airborne Network



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Datalink-centric, Platform-centric
Today

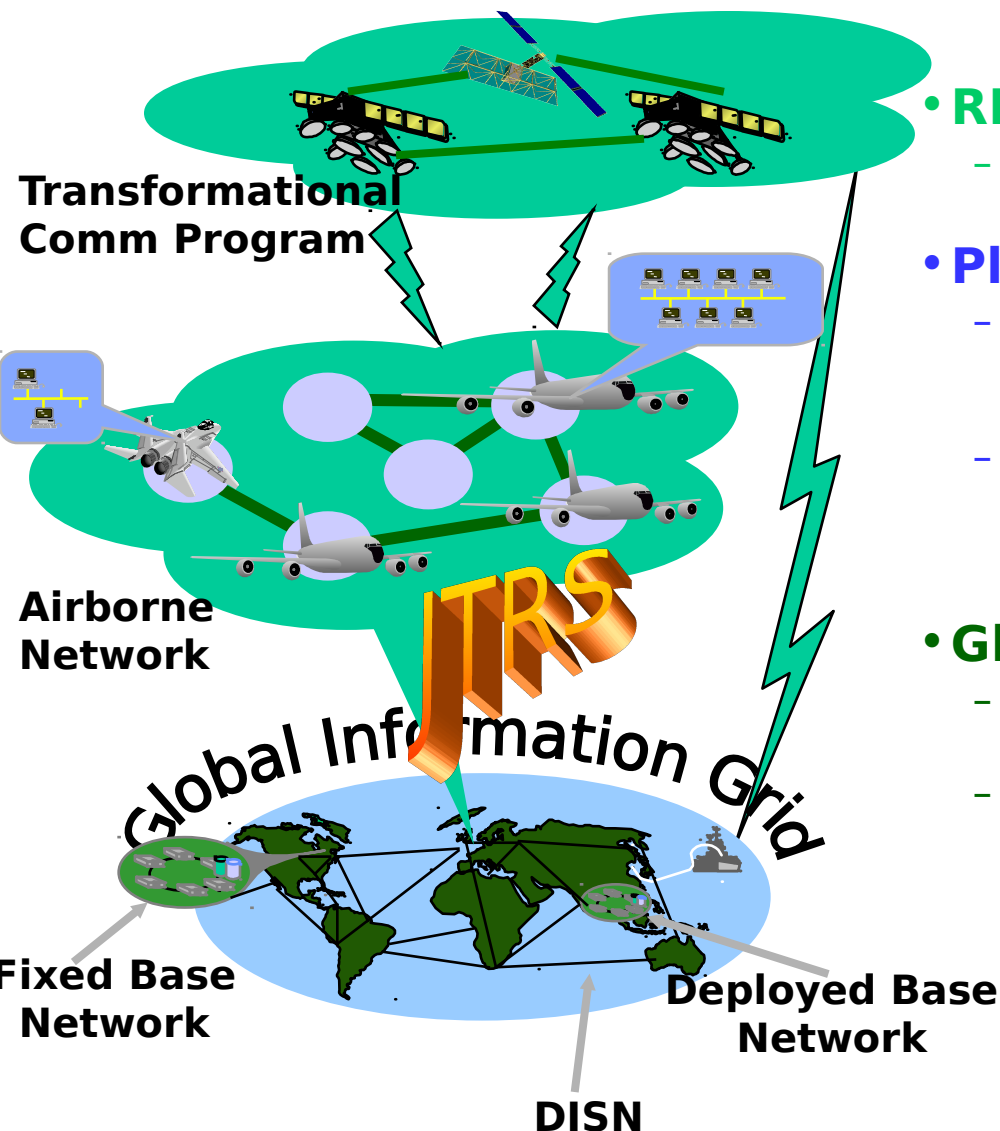
*How do we evolve
legacy capability
into the network?*



Key Components to Network-Centric Capability



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• RF network

- What waveform attributes are needed for network-centric operations?

• Platform network

- What onboard network attributes are needed to support network-centric operations?
- What platform-related factors constrain JTRS integration (form factor variations, legacy interfaces, weight limits...)?

• Global Grid extension

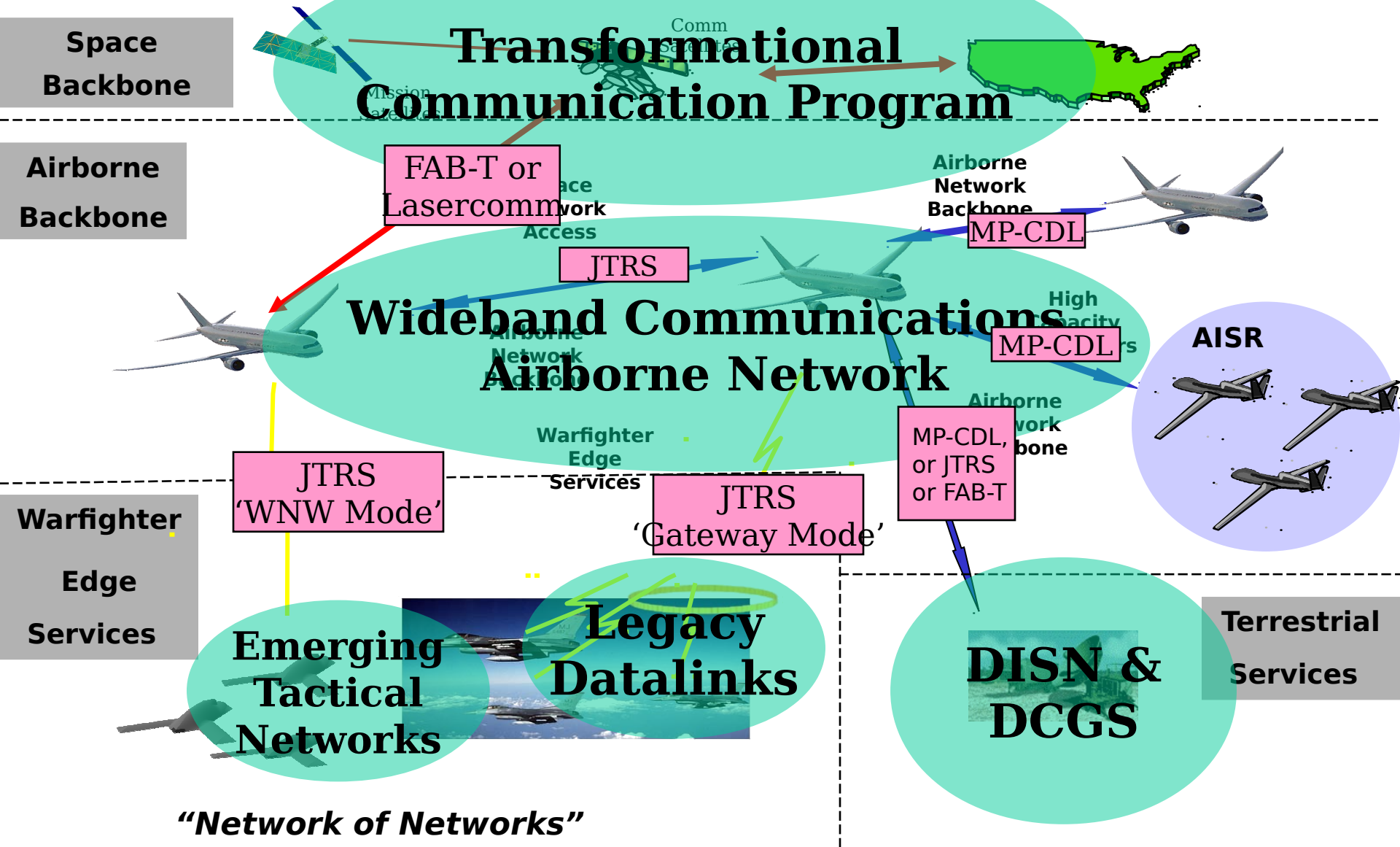
- What are implications of GIG integration?
- How will airborne platform information flow seamlessly across all tiers of the GIG? (Terrestrial, Airborne, and Space)

Airborne JTRS

Bringing Global Grid to the Warfighter



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Acquisition Approach

Key Cluster 4 Program Tenets



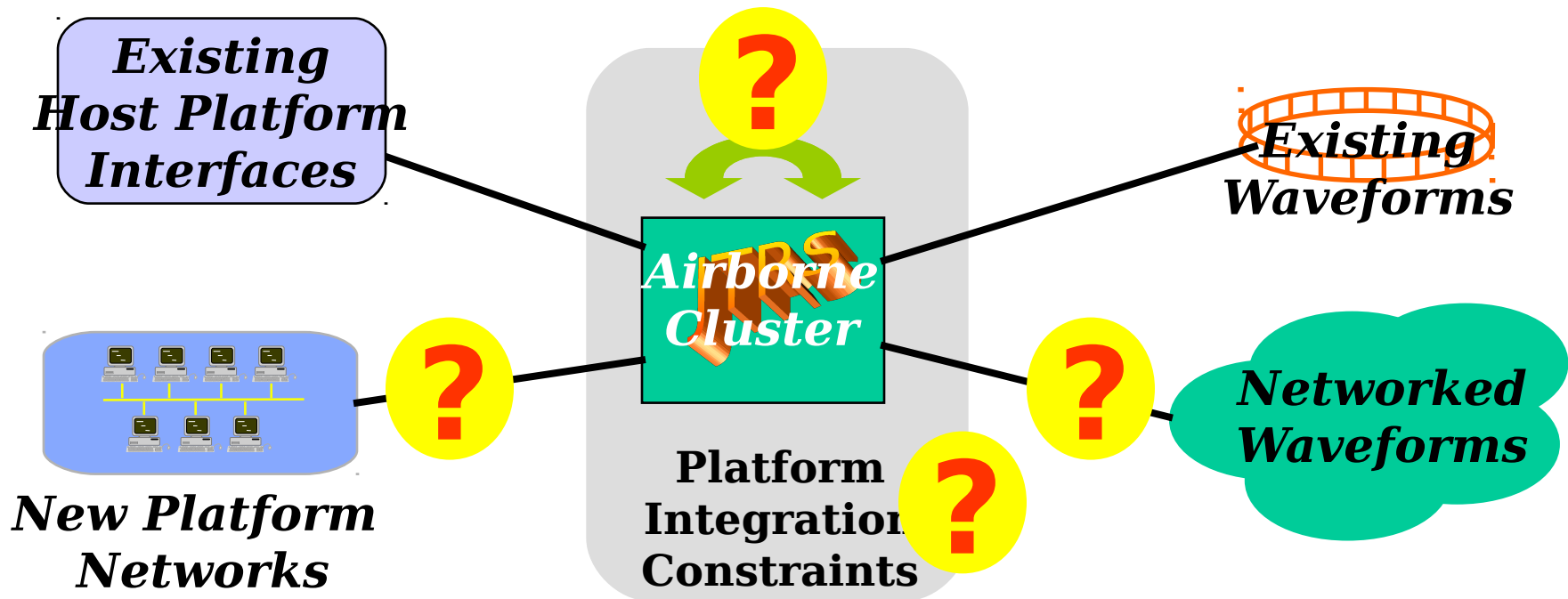
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- **Forward-looking**: define platform & RF for network-centric architecture; maximize future capabilities (return on JTRS investment)
- **Cost effective**: leverage prior investment by accommodating platform constraints where possible; manage total ownership cost
- **Evolutionary**: enable step-wise migration of platforms to network-centric operations

Design Drivers Summary



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What capability is needed to service platform networks?

What waveforms must the Airborne JTRS host?

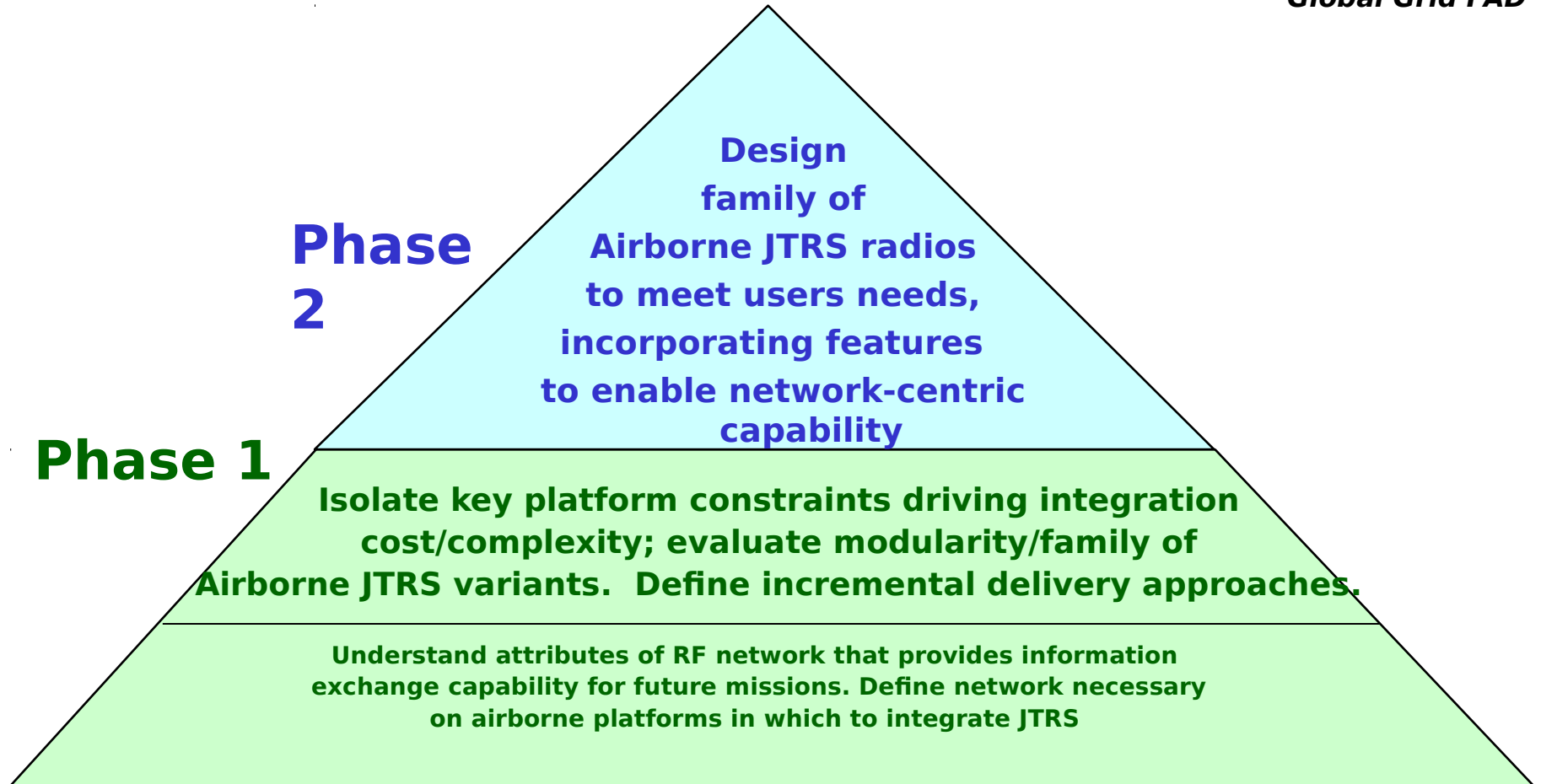
What physical architectures meet expected platform constraints?

What kinds of gateway capabilities allow evolutionary migration?

Airborne JTRS Program Strategy



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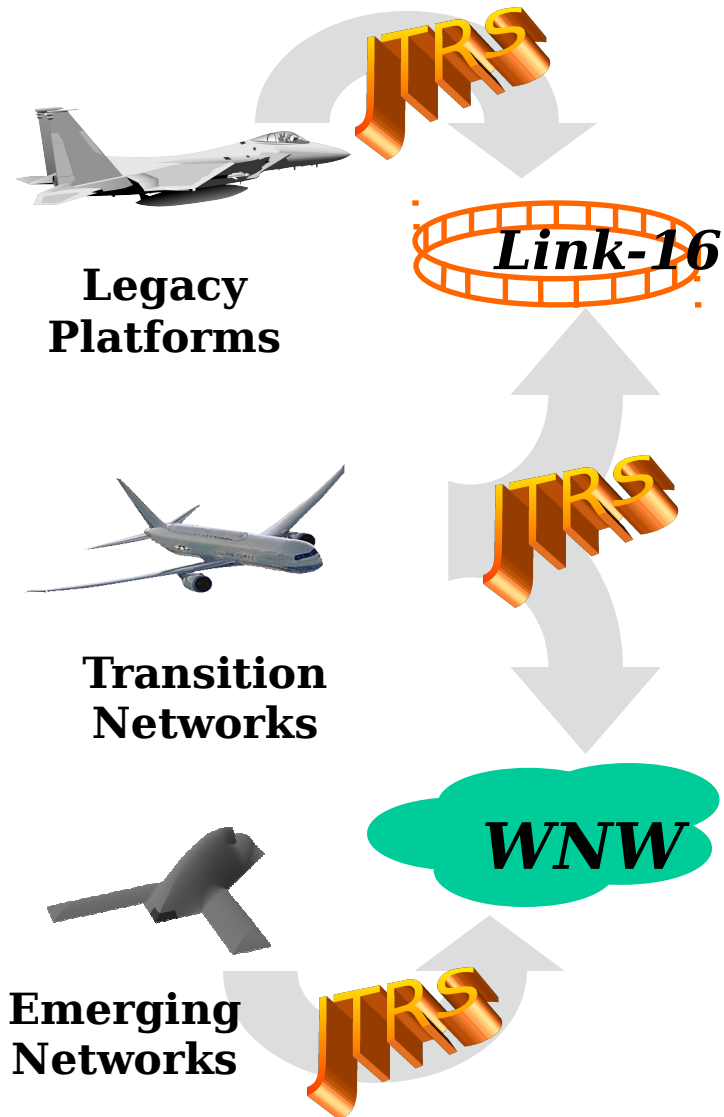


- *Understanding networking capability is foundation for defining radio requirements*
- *Radio system design should be responsive to platform constraints*
- *Strategy should support legacy systems' transition to airborne network*

JTRS Meeting All Airborne Radio Needs



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- **Replacement capability**

- Meeting the replacement needs of the airborne forces
- ***Backwards Compatible:*** Accommodates platform constraints

- **Transition capability**

- ***Backwards Compatible:*** Accommodates platform constraints
- ***Forward Compatible:*** Enables migration to network

- **Network capability**

- Creating a network-centric infrastructure for the airborne forces

Two-Phased SDD Approach



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Phase 1: Initial Platform Integration/Networking Designs

- Collaborate with users and platform integrators to define airborne network and on-board network considerations; examine platform constraints
- Lincoln Lab: define RF network attributes that drive joint wideband waveform definition; draft concept for on-board platform network
- 2-3 parallel design efforts by Industry; Government chooses best aspects of initial designs to refine SDD requirements
 - Architecture for overall network and on-board network
 - Concepts for how JTRS can accommodate legacy interfaces/form factors
 - Recommendations to user(s) on incremental delivery of capability
- Development of draft interface specifications for key JTRS platforms

Phase 2: Full and Open Competition for JTRS Airborne SDD

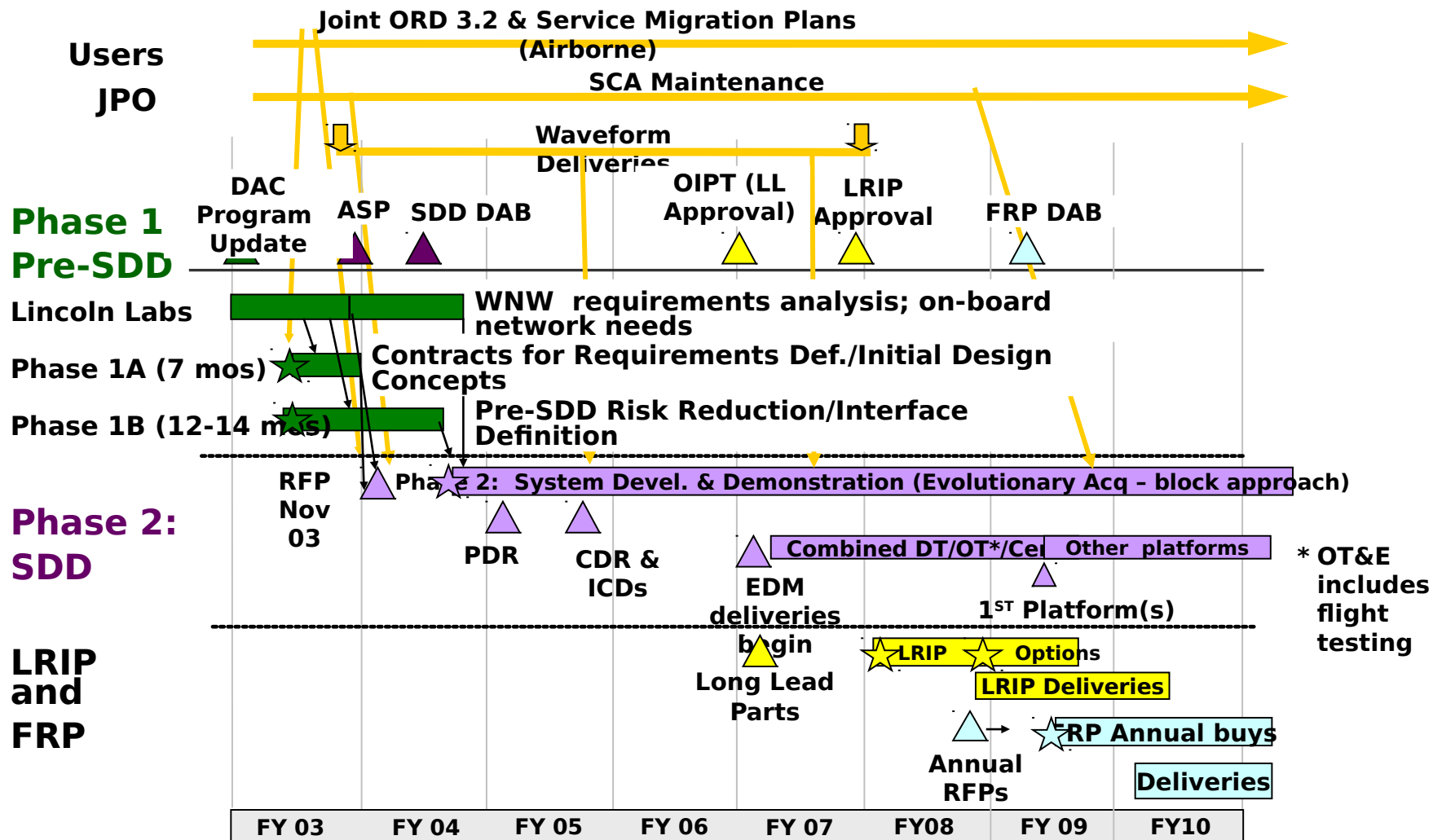
- Develop JTRS to meet time-phased ORD requirements
- Collaborate with platform SPOs on interface development for new capabilities and on platform network development as needed

Phase I requirements definition drives design of Airborne JTRS family of radios

Airborne JTRS Program Optimal Schedule*



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☆ = Contract

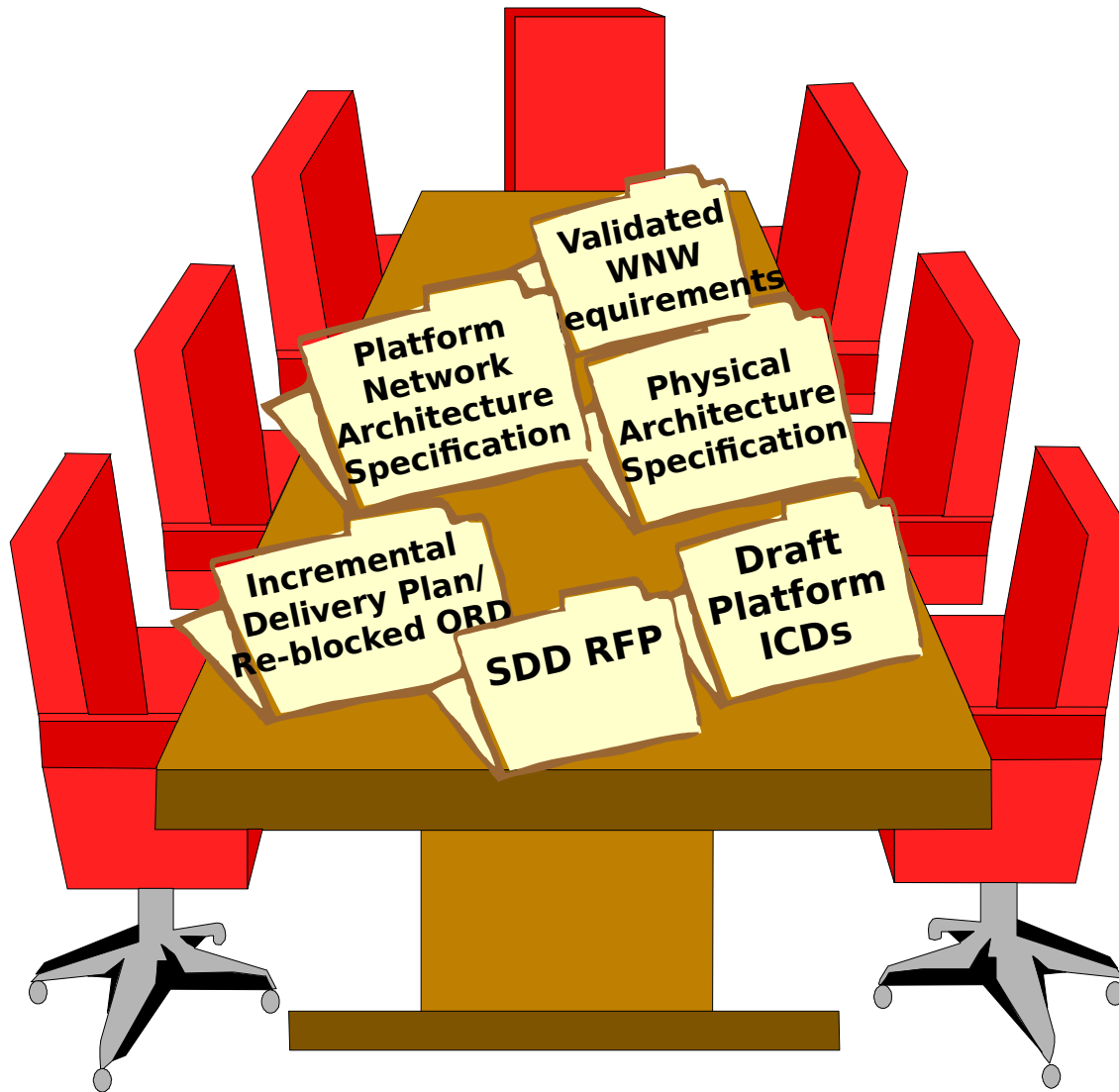
* Requires additional funding in FY 04

As of: 28 Oct 03

Phase I Products



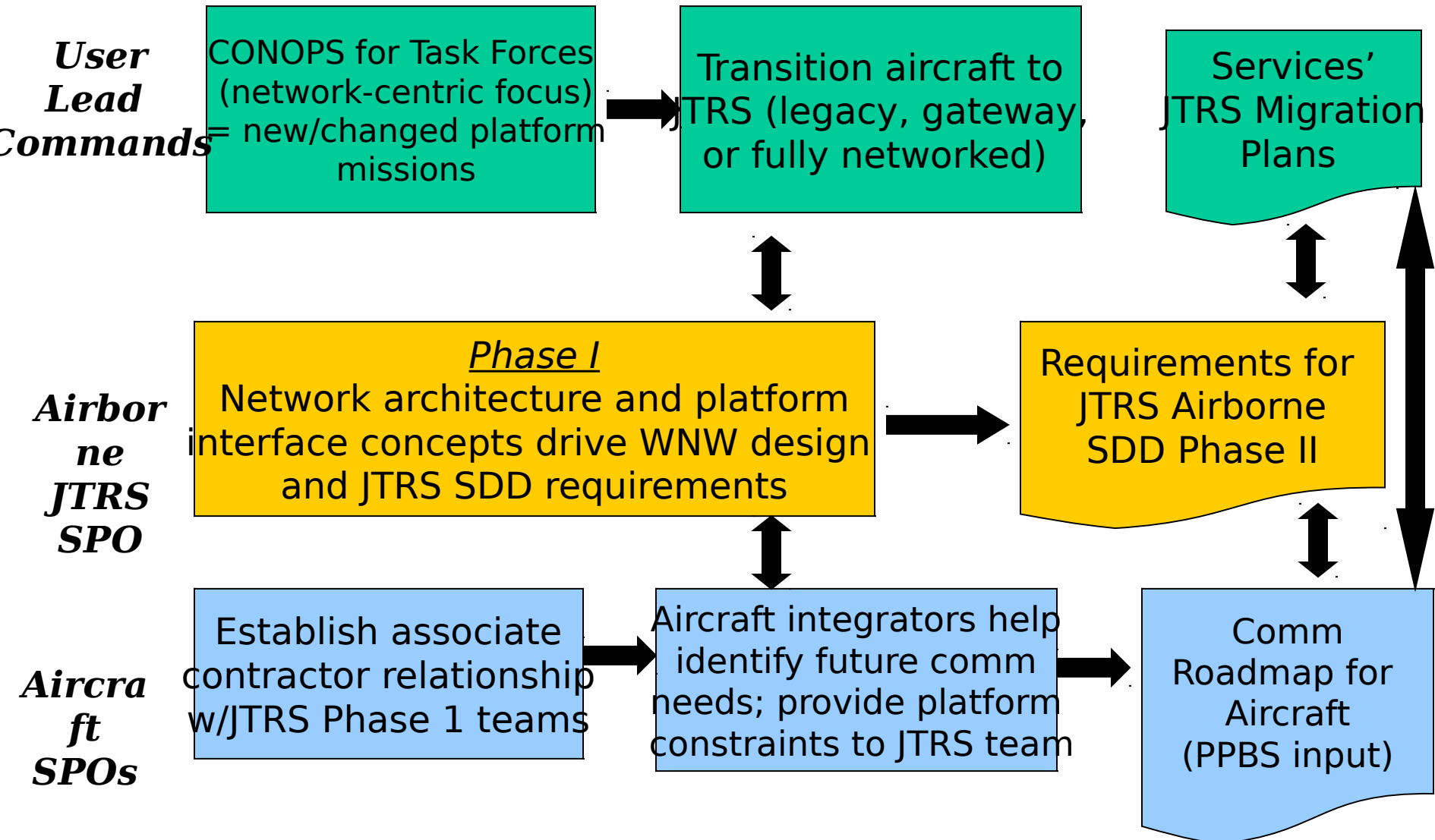
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Collaboration with Stakeholders



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Migration Plan

Defines time-phased capability



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- Vision for comm in support of future Conops
- Time-phased comm upgrade plan for airborne platforms; harmonized with TDL roadmap



- Transition plan for each platform
- Options:
 - No JTRS migration (need JTRS waiver)
 - Replacement (legacy is unsustainable)
 - Gateway (transition)
 - Network (full capability)

Comm Roadmap

Details the investment strategy



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- Basis for programming and budgeting for airborne communications infrastructure appropriate for future missions
- Implements the Migration Plan
 - Modifies each aircraft type as needed
 - Time-phased

Funded

Next Steps - Industry



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- 28-31 Oct: Provide feedback to government Airborne JTRS team
- By 8 Nov: provide comments on DRAFT Statement of Objectives
 - DRAFT SOO posted on HERBB site
- By 12 Nov: provide responses to Request for Information (RFI)
 - RFI posted on HERBB site
- Jan 03: proposals due for Phase 1 efforts

Next Steps - Government



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- 29 Oct: Airborne JTRS update to AF/XI, Lt Gen Leslie Kenne
- Oct-Nov 02: Ongoing coordination with Services' lead commands and platform SPOs to refine Phase 1 strategy and content
- Week of 4 Nov: post on HERBB responses to Industry questions from one-on-ones and subsequent queries (non-attributed)
- 4 Nov-early Dec 02:
 - Airborne JTRS IPT (ESC, Service users, Platform SPOs...) evaluate inputs from Industry Day and Request for Information
 - Refine Phase 1 solicitation, and overall schedule if possible
- Early Dec 02: release solicitation for Phase 1 competition

Summary



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- **JTRS ROI requires up-front definition**
- **JTRS leveraged to provide new capability**
 - **Phased acquisition approach**
 - **Provides foundation for airborne network-centric communications**
 - **Evolutionary approach enhances affordability and migration planning**
- **Collaboration with stakeholders and suppliers is key**
 - **Must share a common vision**
 - **Service users, platform SPOs, Airborne JTRS SPO**
 - **Government/industry teaming to define cost-effective program in tune with schedule demands of earliest**

***Provides the Airborne Network in
Network-Centric Warfare***



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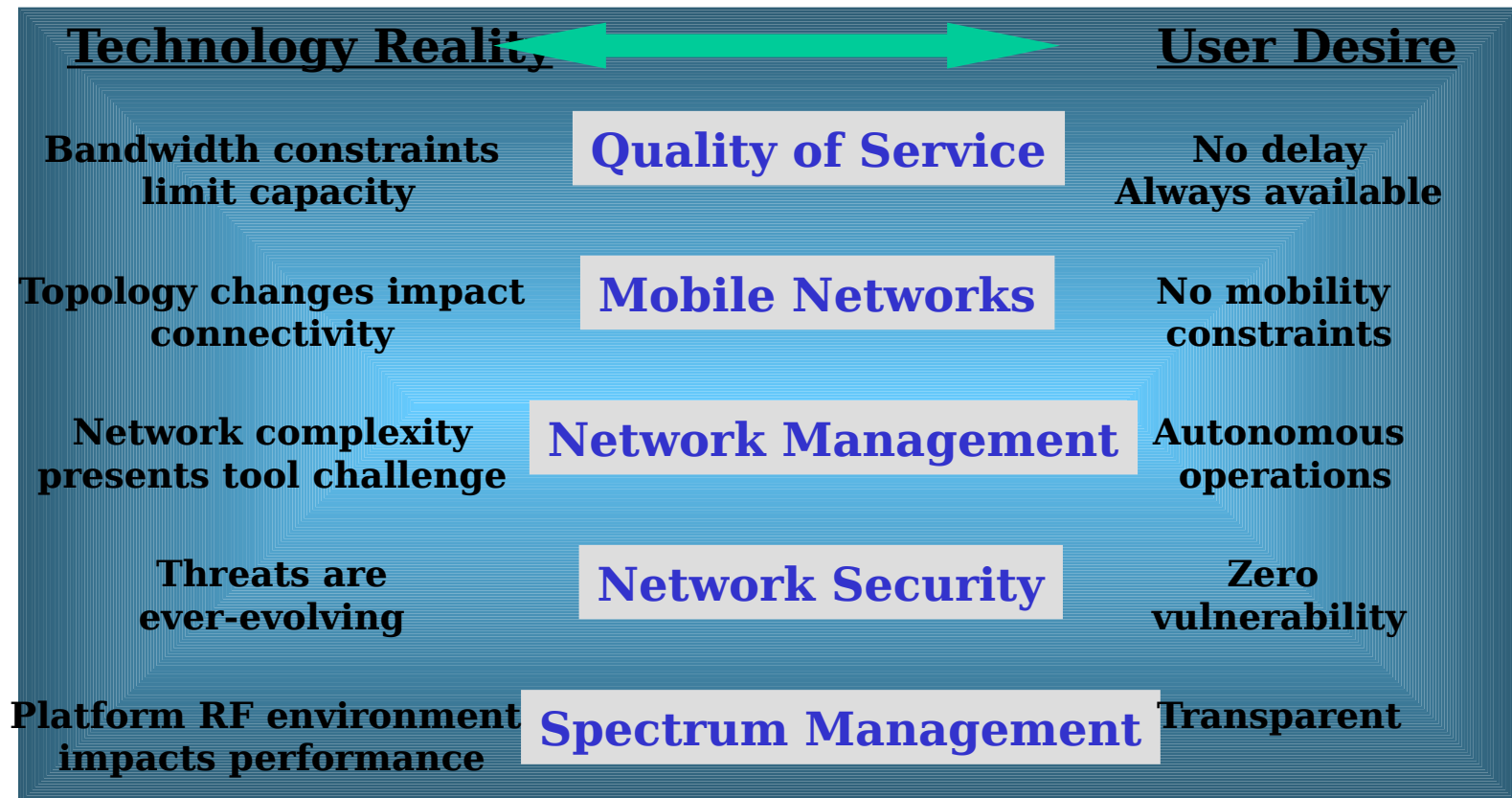
Backup

Technology Challenges



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Design architecture for technology evolution
Manage risk through incremental capability delivery



Demand for Production Deliveries



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<u>Customer</u>	<u>Requirements FY08 or earlier</u>	<u>Requirements early as FY09</u>	<u>Requirements early as FY10</u>
USAF	A-10 (FY06), MC-130E (FY07), EC-130H,J (FY06), MC2A, E-8 AC130U, AL-1A, B-52H, B1B MC-130H, U-2S	AC-130H, MC-130P	F-117A
Navy	AV-8B, MH-60 R/S MMA		E-6A, E-2C F/A-18C/D/E/F KC-130T E-P3, P-3C EA-6B replcmt (FY11)
USMC	MV-22	AH-1Z, CH-53E UH-1Y	
Army	ER/MP UAV (ASAP)		Shadow 200 UAV (TBD)